

to; Claims 16, 31 and 58 were rejected under 35 U.S.C. § 112, first paragraph; Claims 1, 5-8, 13, 14, 17, 21-24, 29, 30, 32, 36-39 and 44 were rejected under 35 U.S.C. § 102(b) as anticipated by Nonoyama et al; Claims 2-4, 19-20 and 34-35 were rejected under 35 U.S.C. § 103(a) as unpatentable over the reference applied to Claim 1 in view of Novotny et al; Claims 45-50, 55 and 56 were rejected under 35 U.S.C. § 103(a) as unpatentable over Novotny et al and Nonoyama et al; Claims 9, 25, 40 and 51 were rejected under 35 U.S.C. § 103(a) as unpatentable over the reference applied to Claims 1, 17, 32 and 45 in view of Yoshinari et al; Claims 10, 26, 41 and 52 were rejected under 35 U.S.C. § 103(a) as unpatentable over the reference applied to Claims 1, 17, 32 and 45 in view of Okubo; Claims 11, 12, 27, 28, 42, 43, 53 and 54 were rejected under 35 U.S.C. 103(a) as unpatentable over the reference applied to Claims 1, 17, 32 and 45 in view of Kikuchi et al; Claims 15 and 57 were rejected under 35 U.S.C. § 103(a) as unpatentable over the reference applied to Claims 1 and 45 in view of either Takeuchi et al and Novotny et al; Claims 16, 31 and 58 were rejected under 35 U.S.C. § 103(a) as unpatentable over the reference applied to Claim 1, 17, and 45 in view of official notice; Claims 1, 5-10, 13 and 14 were rejected under 35 U.S.C. § 102(a) as anticipated by Miyamoto et al; Claims 17-26, 29, 32-42, 44-52 and 55-56 were rejected under 35 U.S.C. § 103(a) as unpatentable over Miyamoto et al in view of Novotny et al; Claims 11, 12, 27, 28, 42, 43, 53 and 54 were rejected under 35 U.S.C. § 103(a) as unpatentable over Miyamoto et al in view of Kikuchi et al; Claims 15, 30 and 57 were rejected under 35 U.S.C. § 103(a) as unpatentable over Miyamoto et al in view of either Takeuchi et al and Novotny et al; and Claims 16, 31 and 58 were rejected under 35 U.S.C. § 130(a) as unpatentable over Miyamoto et al in view of the admitted prior art.

In response to the objection to the title, the title has been amended to be clearly indicative of the invention to which the claims are directed. Accordingly, it is respectfully

requested this objection be withdrawn.

In response to the objection to the drawings, the claims have been amended to not include references to an index of refraction. Therefore, it is respectfully requested this objection be withdrawn.

Regarding the rejection of Claims 16, 31 and 58 under 35 U.S.C. § 112, first paragraph, Applicants note that the subject matter of Claims 16, 31 and 58 is described in the specification at page 20, lines 2-15. In addition, Applicants respectfully submit the composition of a dye used in a recording medium is well known in the art as evidenced by U.S. Patent No. 5,486,437 (see the enclosed abstract). Therefore, it is respectfully requested this rejection be withdrawn.

Claims 1, 5-8, 13, 14, 17, 21-24, 29, 30, 32, 36-39 and 44 were rejected under 35 U.S.C. § 102(b) as anticipated by Nonoyama et al. This rejection is respectfully traversed.

Claim 1 has been amended to recite a light reflecting layer is directly formed on a substrate and that the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer. Claim 1 also recites a recording layer is formed on the light reflecting layer. Independent Claims 17, 32 and 45 include similar features.

In a non-limiting example, Figure 6 shows a substrate 61, a light reflecting layer 62 directly formed on the substrate 61, a recording layer 64 formed on the light reflecting layer 62, a first protective layer 65 and a transparent heat radiating layer 66.

Thus, according to the present invention, heat built up at the recording layer due to the focusing of laser light is dispersed to the surface of the optical recording medium via the heat radiating layer. Therefore, it is possible to prevent a rise in temperature at the surface of the optical recording medium due to focusing of laser light, and thus it is possible to maintain the

signal recorded on the optical recording medium and prevent damage to the optical recording medium due to heat (see page 11, first paragraph). Further, the reflective layer 62 not only reflects light focused on the optical disk, but also functions to promote the dispersion of heat from the recording layer 64. While the temperature of the recording layer 64 rises due to the absorption of light, the high heat conductivity reflective layer 62 acts as a heat sink (see page 20, line 25 to page 21, line 7).

Nonoyama et al disclose in Figure 1 a substrate 2, a recording layer 4, a protective layer 5 and a heat radiating layer 6. As discussed during the interview, Nonoyama et al do not teach or suggest a light reflecting layer directly formed on the substrate and that the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer. Nonoyama et al thus also do not teach or suggest the recording layer being formed on the light reflecting layer.

Accordingly, it is respectfully submitted independent Claims 1, 17, 32 and 45 and each of the claims depending therefrom are allowable.

In addition, regarding the additional references noted in the outstanding Office Action, Applicants note Kikuchi et al disclose a reflection layer 5 formed on an adhesive layer 6 which is formed on a substrate 1b, as shown in Figures 1 and 2. However, the reflecting layer 5 in Kikuchi et al is not directly formed on the substrate. Further, the reflection layer 5 in Kikuchi et al does not reflect light focused on the optical recording medium nor disperse the heat from the recording layer. Rather, Kikuchi et al disclose that the light reflecting layer is directly formed on an adhesive layer 6.

The other references noted in the outstanding Office Action (namely, Novotny et al, Yoshinori et al, Okubo, Takeuchi et al and Miyamoto et al) also do not teach or suggest the claimed features. Accordingly, it is respectfully submitted that each of the other rejections

noted in the outstanding Office Action have also been overcome.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance, and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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IN THE TITLE

(New).

IN THE CLAIMS

Please amend the claims to read as follows:

1. (Twice Amended) An optical recording medium for use in a near field condition comprising:
 - a substrate;
 - a light reflecting layer directly formed on said substrate;
 - a recording layer [having a first index of refraction,] formed on the [substrate] light reflecting layer;
 - a first protective layer [having a second index of refraction,] formed on the recording layer; and
 - a transparent heat radiating layer [having a third index of refraction,] formed on the first protective layer so as to disperse heat from the recording layer, wherein

[the first index of refraction is higher than the second and third indexes of refraction and] the recording layer is exposed to light via a side at which the transparent heat radiating layer is positioned to thereby perform recording and reproduction of information, and

the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.

17. (Twice Amended) An optical recording and reproduction device comprising:

a head having a light source;

an optical recording medium; and

an optical system focusing light from the light source to the optical recording medium in a near field condition, wherein the optical recording medium comprises,

a substrate,

a light reflecting layer directly formed on said substrate.

a recording layer [having a first index of refraction,] formed on the [substrate] light reflecting layer,

a first protective layer [having a second index of refraction,] formed on the recording layer, and

a transparent heat radiating layer [having a third index of refraction,] positioned towards the head and formed on the first protective layer so as to disperse heat from the recording layer, wherein

the recording layer is exposed to the light via a side at which the transparent heat radiating layer is formed to thereby perform recording and reproducing of information, and [the first index of refraction is higher than the second and third indexes of refraction]

the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.

32. (Twice Amended) An optical recording and reproduction device comprising:

a head having a light source;

an optical recording medium; and

an optical system focusing light from the light source to the optical recording medium in a near field condition, wherein the optical recording medium comprises,

a substrate,

a phase change recording layer [having a first index of refraction,] formed on the [substrate] light reflecting layer and comprising a material undergoing a phase change under said focusing of light,

a first protective layer [having a second index of refraction,] formed on the phase change recording layer, and

a transparent heat radiating layer [having a third index of refraction,] positioned towards the head and formed on the first protective layer so as to disperse heat from the phase change [recording] recording layer, wherein

[the first index of refraction is higher than the second and third indexes of refraction, and] the phase change recording layer is exposed to light via a side at which the transparent heat radiating layer is formed to thereby perform recording and reproducing of information, and

the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.

45. (Twice Amended) An optical recording and reproduction device comprising:

a head having a light source;

an optical recording medium; and

an optical system focusing light from the light source to the optical recording medium in a near field condition, wherein the optical recording medium comprises[:],

a substrate,

a light reflecting layer directly formed on said substrate.

a recording layer [having a first index of refraction,] formed on the [substrate] light reflecting layer,

a first protective layer [having a second index of refraction,] formed on the recording layer, and

a transparent heat radiating layer [having a third index of refraction,] formed on the first protective layer so as to disperse heat from the recording layer, wherein

[the first index of refraction is higher than the second and third indexes of refraction, and] the light is focused from the optical system [comprising a near field] with a [the] numerical aperture more than 1 to the recording layer via a side at which the transparent heat radiating layer is formed for recording and reproducing information, and

the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.

IN THE ABSTRACT

Page 41, please delete the paragraph beginning at line 1 and substitute with the following:

--OPTICAL RECORDING MEDIUM/SYSTEM WITH HEAT-DISSIPATING AND LIGHT REFLECTING LAYERS--